

CLAIMS:

1. An organic light emitting diode (OLED) display device, the display device having a plurality of pixels each comprising at least two sub-pixels of different types, a first sub-pixel type comprising an OLED device including a first type of OLED material and a second sub-pixel type comprising an OLED device including a second type of OLED material, and wherein at least one of said first and second types of sub-pixel comprises a plurality of series-connected OLED devices.
2. An OLED display device as claimed in claim 1 wherein a said pixel has a common power supply line for supplying power to said at least two sub-pixels.
3. An OLED display device as claimed in claim 2 wherein an OLED device including said first type of OLED material has a lower drive voltage than an OLED device including said second type of OLED material, and wherein at least said first type of sub-pixel comprises series connected devices.
4. An OLED display device as claimed in claim 1 wherein each of said plurality of series connected devices has substantially the same light emissive area.
5. An OLED display device as claimed in claim 1 wherein said first and second types of OLED material have different peak emission wavelengths.
6. An OLED display device as claimed in claim 1 wherein a said pixel comprises three sub-pixels of different types, a said pixel including a third sub-pixel type comprising an OLED device including a third type of OLED material.
7. An OLED display device as claimed in claim 6 wherein at least two of said sub-pixel types comprise a plurality of series-connected OLED devices.
8. An OLED display device as claimed in claim 1 further comprising a drive transistor associated with each sub-pixel.

9. An OLED display device as claimed in claim 1 wherein a series-connection configuration of OLED devices of said first and second sub-pixel types is determined by a supply or operating voltage for which the display device is designed.

10. An OLED display device as claimed in claim 1 wherein said first type of OLED material comprises a fluorescent material.

11. An OLED display device as claimed in claim 10 wherein said second type of OLED material comprises a phosphorescent OLED material.

12. An OLED display device as claimed in claim 1 wherein said first type of OLED material comprises a polymer material.

13. An OLED display device as claimed in claim 12 wherein said second type of OLED material comprises a dendrimer OLED material or small molecule OLED material.

14. An active matrix color display incorporating the display device of claim 1.

15. A color active matrix OLED display having a plurality of pixels, each pixel comprising a red sub-pixel, a green sub-pixel, and a blue sub-pixel powered from a common supply line and having an associated sub-pixel driver transistor, at least one of said red, green and blue sub-pixels comprising two or more series connected organic light emitting diodes (OLEDs).

16. A color active matrix OLED display as claimed in claim 15 wherein power requirements of said red, green and blue sub-pixels are balanced such that a power requirement of a said pixel including said associated sub-pixel driver transistors, with said red, green and blue sub-pixels illuminated, is less than a power requirement a said pixel would have for substantially the same perceived brightness were none of said sub-pixels to comprise series-connected OLEDs.

17. A method of designing an organic light emitting diode (OLED) display device, the display device having a plurality of pixels each comprising at least two sub-pixels of different types, a first sub-pixel type comprising an OLED device including a first type of

OLED material and a second sub-pixel type comprising an OLED device including a second type of OLED material, and wherein at least one of said first and second types of sub-pixel comprises a plurality of series-connected OLED devices, the method comprising selecting whether said first and second types of sub-pixel comprise series-connected OLED devices dependent upon a drive voltage for a said OLED device of a said sub-pixel.